Response under 37 C.F.R. § 1.111 Attorney Docket No. 030921

Application No. 10/628,455

Group Art Unit: 2837

AMENDMENTS TO THE CLAIMS

The listing of claims below replaces all prior versions of claims in the application.

Claim 1 (Currently Amended): A positioning apparatus comprising:

a brushless motor having a plurality of magneto-sensitive elements and a plurality of

fixed coils;

a positioning mechanism to position a movable member within a predetermined movable

range in accordance with rotation of the brushless motor; and

a motor control circuit to rotate a rotor of the brushless motor by sequentially supplying

[[a]] driving pulses to a plurality of said fixed coils of the brushless motor;

wherein the motor control circuit comprises:

driving pulse generating means to generate the driving pulse,

present stage number detecting means to detect a present stage number of to which a

current angular position of the rotor belongs in accordance with an output signals from at least

one said magneto-sensitive device elements of the brushless motor,

initialization means to move the movable member to at least a forward traveling limit or a

backward traveling limit within the movable range so as to set the rotor detected present stage

number as a forward traveling limit stage number or a backward traveling limit stage number

when the movable member reaches the forward traveling limit or the backward traveling limit,

and

speed reduction means to reduce a rotating speed of the brushless motor rotor by reducing

power of <u>carried by</u> the driving pulses when the rotor <u>detected</u> present stage number is equal to

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either one of the forward traveling limit stage number and the backward traveling limit stage

number.

Claim 2 (Original): The positioning apparatus according to claim 1, wherein the speed

reduction means reduces the rotating speed of the brushless motor when the rotor present stage

number is equal to a stage number that is less than one of the forward traveling limit stage

number and the backward traveling stage number by at least one.

Claim 3 (Original): The positioning apparatus according to claim 1, wherein the driving

pulse comprises a series of a plurality of pulses, and the speed reduction means issues a

command to make each of the plurality of pulses have a reduced duty ratio.

Claim 4 (Original): The positioning apparatus according to claim 1, wherein the rotor

present stage number corresponds to one of six control stage numbers determined from a

combination of output signals from three magneto-sensitive devices.

Claim 5 (Original): The positioning apparatus according to claim 1, wherein the

magneto-sensitive device is a Hall sensor.

Claim 6 (Previously Presented): The positioning apparatus according to claim 1, wherein

at least three magneto-sensitive devices are provided around the brushless motor.

Claim 7 (Original): The positioning apparatus according to claim 1, wherein the movable

member is a gear ratio determining member of an automatic transmission of a vehicle.

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Claim 8 (Original): The positioning apparatus according to claim 1, wherein the stage number increments when the rotor turns through 60 degrees.

Claim 9 (Currently Amended): A positioning apparatus comprising:

a brushless motor <u>having a plurality of magneto-sensitive elements and a plurality of</u> fixed coils;

a positioning mechanism to position a movable member within a predetermined movable range in accordance with rotation of the brushless motor; and

a motor control circuit to rotate a rotor of the brushless motor by sequentially supplying

[[a]] driving pulses to a plurality of said fixed coils of the brushless motor;

wherein the motor control circuit comprises:

a driving pulse generator to generate the driving pulses,

a present stage number detector to detect a present stage number of to which a current angular position of the rotor belongs in accordance with an output signals from at least one said magneto-sensitive device elements of the brushless motor,

an initializer to move the movable member to at least a forward traveling limit or a backward traveling limit within the movable range so as to set the rotor detected present stage number as a forward traveling limit stage number or a backward traveling limit stage number when the movable member reaches the forward traveling limit or the backward traveling limit, and

a speed reducer to reduce a rotating speed of the brushless motor rotor by reducing power

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of carried by the driving pulses when the rotor detected present stage number is equal to either

one of the forward traveling limit stage number and the backward traveling limit stage number.

Claim 10 (Original): The positioning apparatus according to claim 9, wherein the speed

reducer reduces the rotating speed of the brushless motor when the rotor present stage number is

equal to a stage number that is less than one of the forward traveling limit stage number and the

backward traveling stage number by at least one.

Claim 11 (Original): The positioning apparatus according to claim 9, wherein the driving

pulse comprises a series of a plurality of pulses, and the speed reducer issues a command to

make each of the plurality of pulses have a reduced duty ratio.

Claim 12 (Original): The positioning apparatus according to claim 9, wherein the rotor

present stage number corresponds to one of six control stage numbers determined from a

combination of output signals from three magneto-sensitive devices.

Claim 13 (Original): The positioning apparatus according to claim 9, wherein the

magneto-sensitive device is a Hall sensor.

Claim 14 (Previously Presented): The positioning apparatus according to claim 9,

wherein at least three magneto-sensitive devices are provided around the brushless motor.

Claim 15 (Original): The positioning apparatus according to claim 9, wherein the

movable member is a gear ratio determining member of an automatic transmission of a vehicle.

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Claim 16 (Original): The positioning apparatus according to claim 9, wherein the stage number increments when the rotor turns through 60 degrees.